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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/615,894	07/09/2003	Takeshi Ootsuka	P/2850-80	9850

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EXAMINER	
DHINGRA, RAKESH KUMAR	
ART UNIT	**PAPER NUMBER**
1763	

DATE MAILED: 01/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/615,894	OOTSUKA, TAKESHI	
	Examiner	Art Unit	
	Rakesh K. Dhingra	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 July 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

Figure 6 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities:

Page 13, line 4 – it is suggested to replace "these mounting player 12" with "the mounting plate 12".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiang et al (US PGPUB No. 2005/0051100) in view of Arami et al (US Patent No. 5,591, 269) and Yamaguchi (US Patent No. 6,645,304).

Regarding Claim 1: Chiang et al teach an electrode-built-in susceptor (Figures 1, 6-8, 27-31) comprising:

An electrostatic chuck (susceptor base body) 6 which is made of an aluminium-nitride on one of which surface a plate substrate (sample) 8 is mounted, inner electrodes 80, 82 that are built in the susceptor member 6;

a power supplying terminal 318 (Figure 27A), which is disposed in the susceptor base body so as to be attached to the inner electrode 80 (Paragraphs 0073, 0088-0091, 0157-0160).

Chiang et al do not teach insulating layer of boron nitride etc and susceptor body made of aluminum nitride –group-sintered-member.

Arami et al teach a mounting table (electrode built-in susceptor) 21 [Figures 1-3] that includes a base (susceptor base body) 22 on which one of which surface a wafer (sample) W is mounted, conductive members (inner electrodes) 24, 25 that are built in the mounting table assembly 15 and connected to separate DC power supplies and an insulating layer 27 which is formed by a thin film of boron nitride or aluminum oxide between the inner electrodes 25, 26 and the mounting surface (Column 8, lines 20-65).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use insulating layer of boron nitride between electrodes and mounting surface as taught by Arami et al in the apparatus of Chiang et al to obtain electrostatic chucking means (Column 3, lines 5-15).

Arami et al do not teach susceptor body made of aluminum nitride –group-sintered-member.

Yamaguchi teaches a susceptor assembly (Figure 1) that includes a susceptor body 1 comprising of supporting layer 2 and surface layer 3) made of aluminum nitride –based sintered body.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use susceptor body made from aluminum nitride –based sintered body as taught by Yamaguchi in the apparatus of Chiang et al in view of Arami et al to prevent positional deviation of wafer during hot processing (Column 1, lines 30-35).

Regarding Claim 2: Chiang et al in view of Arami et al and Yamaguchi teach all limitations of the claim as explained above.

Regarding Claim 5: Chiang et al in view of Arami et al and Yamaguchi teach all limitations of the claim including that the susceptor base body (Yamaguchi, Figure 1) 1 is made of an aluminium-nitride-group-sintered-member on one of which surface a wafer (sample) 8 is mounted and a supporting plate 2 which is formed by an aluminum-nitride-group-sintered-member for supporting the mounting plate from there beneath and the insulating layer 27 (Arami et al, Figure 2) is formed in the base (mounting plate) 22.

Claims 3, 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiang et al (US PGPUB No. 2005/0051100) in view of Arami et al (US Patent No. 5,591, 269) and Yamaguchi (US Patent No. 6,645,304) as applied to Claim 1 and further in view of Inazumachi et al (US Patent No. 6,693,789) and Yamamoto et al (US Patent No. 6,475,924).

Regarding Claim 3: Chiang et al in view of Arami et al and Yamaguchi teach all limitations of the claim except that material of terminal is formed by conductive aluminum nitride –tantalum nitride sintered member.

Inazumachi et al teach an apparatus (Figure 2) that includes susceptor terminals 4 made from conductive aluminum nitride – tantalum composite sintered member (Column 4, lines 40-50, Column 9, lines 25-35 and Claim 3).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use terminals made from conductive aluminum nitride – tantalum composite sintered member as taught by Inazumachi et al in the apparatus of Chiang et al in view of Arami et al and Yamaguchi to obtain specific resistance of internal electrode that can be chosen over a wide range (Column 4, lines 40-55).

Chiang et al in view of Arami et al, Yamaguchi and Inazumachi et al teach all limitations of the claim except that the tantalum used in the sintered composite is tantalum nitride.

Yamamoto et al teach (Figure 1) that tantalum nitride has good adhesion with aluminum nitride substrates (Column 4, lines 15-30). Furthermore during sintering process some of the tantalum will be inherently converted to tantalum nitride through reaction with nitride present in the mixture.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use mix tantalum nitride as taught by Yamamoto et al in the apparatus of Chiang et al in view of Arami et al, Yamaguchi and Inazumachi et al to provide high adhesive strength between aluminum nitride and tantalum nitride (Abstract).

Regarding Claim 4: Inazumachi et al teaches that terminal can be formed of ceramic conductive powder mixture of aluminum nitride and tungsten powder and that terminals

can also be formed of powders that contain silicon carbide meaning that these are art recognized equivalents for making terminals (Column 8, lines 20-35 and Column 9, lines 25-35). Further regarding making the terminal into two parts, it has been ruled by courts (Case law):

"Making elements separable was held to have been obvious. *In re Dulberg* 129 USPQ 148 (CCPA 1961)."

Claims 1, 2, 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art in view of Arami et al (US Patent No. 5,591, 269).

Regarding Claim 1: Admitted prior art teach an electrode-built-in susceptor (Figure 6) comprising:

An electrostatic chuck (susceptor base body) 1 which is made of an aluminium-nitride group sintered member on one of which surface 2a a sample is mounted,

inner electrodes 4 that are built in the susceptor member 1;

power supplying terminal 6, which are disposed in the susceptor base body so as to be attached to the inner electrode 4 (Page 2).

Admitted prior art does not teach insulating layer of boron nitride etc.

Arami et al teach a mounting table (electrode built-in susceptor) 21 [Figures 1-3] that includes a base (susceptor base body) 22 on which one of which surface a wafer (sample) W is mounted, conductive members (inner electrodes) 24, 25 that are built in the mounting table assembly 15 and connected to separate DC power supplies and an insulating layer 27 which is formed by a thin film of boron nitride or aluminum oxide between the inner electrodes 25, 26 and the mounting surface (Column 8, lines 20-65).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use insulating layer of boron nitride between electrodes and mounting surface as taught by Arami et al in the apparatus of admitted prior art to obtain electrostatic chucking means (Column 3, lines 5-15).

Regarding Claims 2, 5: Admitted prior art in view of Arami et al teach all limitations of the claims as explained above.

Claims 3, 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art in view of Arami et al (US Patent No. 5,591, 269) as applied to Claim 1 and further in view of Inazumachi et al (US Patent No. 6,693,789) and Yamamoto et al (US Patent No. 6,475,924).

Regarding Claim 3: Admitted prior art in view of Arami et al teach all limitations of the claim except that material of terminal is formed by conductive aluminum nitride – tantalum nitride sintered member.

Inazumachi et al teach an apparatus (Figure 2) that includes susceptor terminals 4 made from conductive aluminum nitride – tantalum composite sintered member (Column 4, lines 40-50, Column 9, lines 25-35 and Claim 3).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use terminals made from conductive aluminum nitride – tantalum composite sintered member as taught by Inazumachi et al in the apparatus of admitted prior art in view of Arami et al to obtain specific resistance of internal electrode that can be chosen over a wide range (Column 4, lines 40-55).

Admitted prior art in view of Arami et al and Inazumachi et al teach all limitations of the claim except that the tantalum used in the sintered composite is tantalum nitride.

Yamamoto et al teach (Figure 1) that tantalum nitride has good adhesion with aluminum nitride substrates (Column 4, lines 15-30). Furthermore during sintering process some of the tantalum will be inherently converted to tantalum nitride through reaction with nitride present in the mixture.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use mix tantalum nitride as taught by Yamamoto et al in the apparatus of admitted prior art in view of Arami et al and Inazumachi et al to provide high adhesive strength between aluminum nitride and tantalum nitride (Abstract).

Regarding Claim 4: Inazumachi et al further teach that terminal can be formed of ceramic conductive powder mixture of aluminum nitride and tungsten powder and that terminals can also be formed of powders that contain silicon carbide meaning that these are art recognized equivalents for making terminals (Column 8, lines 20-35 and Column 9, lines 25-35). Further regarding making the terminal into two parts, it has been ruled by courts (Case law):

"Making elements separable was held to have been obvious. *In re Dulberg* 129 USPQ 148 (CCPA 1961)."

Claims 1-3, 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ootsuka et al (US PGPUB. No. 2004/0074606) in view of Arami et al (US Patent No. 5,591, 269).

Regarding Claim 1: Ootsuka et al teach an electrode-built-in susceptor (Figure 6) 11 comprising:

A mounting plate 12 and a supporting plate 14 which are joined together (susceptor base body) and which are made of an aluminium-nitride group sintered member and on one of which surface 12a a sample is mounted,

inner electrodes 15 that is built in the susceptor 11;

power supplying terminal 16, which are disposed in the supporting plate (susceptor base body) so as to be attached to the inner electrode 15 (Paragraphs 0044-0046).

Ootsuka et al do not teach insulating layer of boron nitride etc between inner electrode and the mounting surface.

Arami et al teach a mounting table (electrode built-in susceptor) 21 [Figures 1-3] that includes a base (susceptor base body) 22 on which one of which surface a wafer (sample) W is mounted, conductive members (inner electrodes) 24, 25 that are built in the mounting table assembly 15 and connected to separate DC power supplies and an insulating layer 27 which is formed by a thin film of boron nitride or aluminum oxide between the inner electrodes 25, 26 and the mounting surface (Column 8, lines 20-65).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use insulating layer of boron nitride between electrodes and mounting surface as taught by Arami et al in the apparatus of Ootsuka et al to obtain electrostatic chucking means (Column 3, lines 5-15).

Regarding Claims 2, 5: Admitted prior art in view of Arami et al teach all limitations of the claims as explained above including that quantity of fixing holes 13 is determined by quantity of inner electrodes 15 (implying that there can be more than one or plurality of electrodes) [Ootsuka et al – Paragraph 0057).

Regarding Claim 3: Admitted prior art in view of Arami et al teach all limitations of the claim including that terminal 16 is made from conductive aluminum nitride –tantalum nitride sintered member (Paragraph 0053).

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ootsuka et al (US PGPUB. No. 2004/0074606) in view of Arami et al (US Patent No. 5,591, 269) as applied to Claim 1 and further in view of Inazumachi et al (US Patent No. 6,693,789).

Regarding Claim 4: Ootsuka et al in view of Arami et al teach all limitations of the claim except that terminal is formed in two parts comprising conductive aluminum nitride – tungsten nitride composite sintered member and silicon carbide sintered member. Inazumachi et al teach an apparatus (Figure 2) that includes susceptor terminals 4 made from conductive aluminum nitride – tantalum composite sintered member (Column 4, lines 40-50, Column 9, lines 25-35 and Claim 3). Inazumachi et al further teach that terminal can be formed of ceramic conductive powder mixture of aluminum nitride and tungsten powder and that terminals can also be formed of powders that contain silicon carbide meaning that these are art recognized equivalents for making terminals (Column 8, lines 20-35 and Column 9, lines 25-35). Furthermore during sintering process some of the tungsten will be inherently converted to tungsten nitride through reaction with nitride present in the mixture.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use terminals made from conductive aluminum nitride – tungsten composite sintered member and from conductive silicon carbide sintered member as taught by Inazumachi et al in the apparatus of Ootsuka et al in view of Arami et al to obtain specific resistance of internal electrode that can be chosen over a wide range (Column 4, lines 40-55). Further regarding making the terminal into two parts, it has been ruled by courts (Case law):

"Making elements separable was held to have been obvious. *In re Dulberg* 129 USPQ 148 (CCPA

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., In re Berg, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); In re Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); In re Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and In re Thorington, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).
A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 3 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claim 1 of copending Application No. 10/613,574 (Ootsuka et al) in view of Arami et al (US Patent No. 5,591,269).

Claim 1 of co-pending Application No. 10/613,564 teaches an electrode-built-in susceptor comprising:

a susceptor base member (susceptor base body) which is made of an aluminium-nitride on one of which surface a plate substrate (sample) is mounted,

an inner electrodes, which is built in the susceptor member;

a power supplying terminal made of conductive aluminum nitride –tantalum nitride composite sintered member, which is disposed in the susceptor base body so as to be attached to the inner electrode.

Claim 1 of co-pending application ('574) does not teach insulating layer of boron nitride etc between inner electrode and mounting surface.

Arami et al teach a mounting table (electrode built-in susceptor) 21 [Figures 1-3] that includes a base (susceptor base body) 22 on which one of which surface a wafer (sample) W is mounted, conductive members (inner electrodes) 24, 25 that are built in the mounting table assembly 15 and connected to separate DC power supplies and an insulating layer 27 which is formed by a thin film of boron nitride or aluminum oxide between the inner electrodes 25, 26 and the mounting surface (Column 8, lines 20-65).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use insulating layer of boron nitride between inner electrodes and mounting surface as taught by Arami et al in the apparatus as per claim 1 of Ootsuka et al (co-pending Application No. 10/613564) to obtain electrostatic chucking means (Column 3, lines 5-15).

This is a provisional obviousness-type double patenting rejection.

Claims 1, 5 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claim 1 of U.S. Patent No. 6,872,908 (Ootsuka et al) in view of Arami et al (US Patent No. 5,591,269).

Claim 1 of US Patent No. 6,872,908 teaches an electrode-built-in susceptor comprising:

a susceptor substrate (susceptor base body) which is made of an aluminium-nitride sintered member on one of which surface a plate specimen (sample) is mounted,

an inner electrode, which is built in the susceptor member;

a power supplying terminal, which is disposed in the susceptor base body so as to be attached to the inner electrode.

Claim 1 of US Patent 6,872,908 does not teach insulating layer of boron nitride.

Arami et al teach a mounting table (electrode built-in susceptor) 21 [Figures 1-3] that includes a base (susceptor base body) 22 on which one of which surface a wafer (sample) W is mounted, conductive members (inner electrodes) 24, 25 that are built in the mounting table assembly 15 and connected to separate DC power supplies and an insulating layer 27 which is formed by a thin film of boron nitride or aluminum oxide between the inner electrodes 25, 26 and the mounting surface (Column 8, lines 20-65).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use insulating layer of boron nitride between electrodes and mounting surface as taught by Arami et al in the apparatus as per Claim 1 of US Patent No. 6,872,908 to obtain electrostatic chucking means (Column 3, lines 5-15).

Claims 1, 5 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claims 1, 3, 4 of U.S. Patent No. 6,768,079 (Kosakai) in view of Arami et al (US Patent No. 5,591,269).

Claims 1-4 of US Patent No. 6,768,079 teaches an electrode-built-in susceptor comprising:

a susceptor substrate (susceptor base body) which is made of an aluminium-nitride (ceramic) on one of which surface a plate specimen (sample) is mounted,

a supporting plate which is formed by aluminum nitride group member for supporting the mounting plate from there beneath;

an inner electrode, which is built in the susceptor member;

a power supplying terminal, which is disposed in the susceptor base body so as to be attached to the inner electrode;

an insulating layer formed between electrode and the sample mounting surface. Claims 1-4 of the patent do not specify material of insulation to be as per claim in the application.

Further, even though claim 1 of the patent does not specifically recite the ceramic material being sintered, the material could include sintered material also (which is a process of making the ceramic).

Arami et al teach a mounting table (electrode built-in susceptor) 21 [Figures 1-3] that includes a base (susceptor base body) 22 on one of which surface a wafer (sample) W is mounted, conductive members (inner electrodes) 24, 25 that are built in the mounting table assembly 15 and connected to separate DC power supplies and an insulating layer 27 which is formed by a thin film of boron nitride or aluminum oxide between the inner electrodes 25, 26 and the mounting surface (Column 8, lines 20-65).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use insulating layer of boron nitride between electrodes and mounting surface as taught by Arami et al in the apparatus as per Claims 1, 4, 5 of US Patent No. 6,768,079 to obtain electrostatic chucking means (Column 3, lines 5-15).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Ohashi et al (US Patent No. 6,486,542) teach (Figure 1) that terminal 1 for susceptors can be formed of conductive ceramic material like silicon carbide (Column 1, lines 40-50 and Column 7, lines 25-45).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rakesh K. Dhingra whose telephone number is (571)-272-5959. The examiner can normally be reached on 8:30 -6:00 (Monday - Friday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571)-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Rakesh Dhingra

Parviz Hassanzadeh
Supervisory Patent Examiner
Art Unit 1763